

SEQUENCE LISTING

<110> University of Guelph

<120> Novel Inducible Genes From Alfalfa And Method Of Use Thereof

<130> 08-892370WO

<140> n/a

<141> 2003-06-27

<150> 60/392,444

<151> 2002-06-28

<160> 19

<170> PatentIn version 3.1

<210> 1

<211> 474

<212> DNA

<213> Nucleotide sequence of H7 coding region

<400> 1

atgggtgttt ttactttcaa ttagtgaacat gtctcaaccg tggctccagc taaaactctac 60

aaggctcttg caaaaagatgc ttagtgaaaatc gtcccaaagg tgatttctgc tgcccaaagt 120

gttgaatttgc ttgaaggaaa tggaggaccc ggaacttatta agaagctatc cattgttcaa 180

gatggcaaaaa ccaactttgt gctacacaaa ttagattcag tggatgaggg aaactttggaa 240

tataactaca gcttagtgaa aggaacaggg ttggatgaaa gtttagagaa agttgaattt 300

gagacaaaaaa ttgttgctgg ctctgatggt ggatccattg ttaagatttc agtggaaatac 360

cataccaaag gtgatgcaac tctatctgaa gcagtacgtg aggagactaa ggccaaagga 420

actggactta tcaaggccat tgagggctac gtttagcaa accctaattt ctag 474

<210> 2

<211> 678

<212> DNA

<213> Nucleotide sequence of H11 coding region

<400> 2

atggcctcca cactcagtct tgtcaagctt cccattcttt caagcatcaa gacacgccaa 60

tcaacctcaa aacatgttgt tccacttcca tccaaattca atattgtccc tcccccccca 120

ctaaagtttt cattagatca tcaaattaat atcaaacaaa cttctttct atccctcaca 180

gcaatcacat ttccattctt attggatacc aaagagtttg ggatatttga aggaagaaca 240

tttgctctca ttcacccat tgtgttggtt ggttgttct tctatactct atatgctggc 300

tatttgggtt ggcaatggcg ccgagttagg actattcaaa atgatattaa tgagctcaag 360

aaacaactca aacctgcacc ggtcgccct gatggtaaag cacttgaaac ttcacccgcca 420

tcacctgttg aacttcaaat ccagaaactt actgaggaga ggaaagagct tatcaaagg	480
tcatacaggg ataaacactt taatgctgga tccatacttc taggatttg tgcttttag	540
gctgttgttg tgaggactca acacatggtt aaggacagga aagctatttc caggtccaca	600
tttatttgca ggagcaggca ttaccgtctt atgggcactg gcagcagctc tagtaccacc	660
gatgcagaaa ggcagtga	678

<210> 3
<211> 744
<212> DNA
<213> Nucleotide sequence of H12 coding region

<400> 3	
atggcaacca acgaagatca aaagcaaact gaatctggaa gacatcaaga agttggtcac	60
aagagtcttt tacaaagtga tgctcttac cagtatattc tagagaccag tgtcttccca	120
agagaacatg aagccatgaa agagttgaga gaggtcacag caaaacaccc atggaacatc	180
atgacaacct ctgcagatga aggacaattt ttgagcatgc tccttaaact tatcaatgct	240
aagaatacca tggaaattgg tgtctacact ggctactccc tccttgccac tgccctagct	300
attcctgaag atggaaagat tttggctatg gacattaaca aagaaaatta cgaattgggt	360
ctacctgtaa ttaaaaaagc tggtgttcatg cacaaaattt atttcagaga aggtccagct	420
cttccagttc ttgatgaaat gatcaaagac gaaaagaatc atggtagcta cgatttcatt	480
tttgtggatg ctgacaaaga caattaccc aactaccata agaggttaat tgatcttgg	540
aaagtggag gtgtgatcg gtacgacaac accttatgga atggatctgt ggttgcaccc	600
cctgatgctc cattgaggaa gtatgttagg tactatagag attttggatggatggatggatgg	660
aaggctttgg ctgtggaccc taggattgaa atatgtatgc ttccctgttgg tgatggaatc	720
actatctgcc gtaggatcaa gttaa	744

<210> 4
<211> 634
<212> DNA
<213> Nucleotide sequence of H7 regulatory region

<400> 4	
acgcgtggtc gacggccccgg gctggtacta aagtattact attaccaaatttttaggacc	60
ccacccatga caccattgtt atatttcaat ttggggaaat attgctataa agttactgtt	120
gtaacttttta gaagaagggtt ttttttttaa ggatttttaga ggaaggtagt caacacacat	180
gcactttaaa tatacatttt ttcttataaa gttttgtat cgagttgaga aatcatatat	240
atactcataa atcatgtgga tttcatataa tttaatagaa cacataaattt ttaaccgaga	300
aataaagtgt tgcaaatata tgtaaaaaga gtacgttggtt aacatttattt taatttcttt	360

tattcaatcc acactttgag tcatggactg ctatacta at tcatttg tt tcgc accc	420
taatttagaga ttgtccagat acaaagagga gtaaccta at aaataaatat taaaatattc	480
accaacggcc tcagtaagct actttagct aacaatgaga tt ccaaata aggtagg tcc	540
ttcccaagtt ctataaatag catccctcac catgtcataa accgcac tac aagttatata	600
ctgtattcat actatacact tatccttca ttta	634

<210> 5
<211> 438
<212> DNA
<213> Nucleotide sequence of H11 regulatory region

<220>
<221> misc_feature
<222> (1)..(438)
<223> where "n" is a or g or c or t or other

<400> 5	
cagaaccccg anaggctggt gctagtatgg ctgcgtt gta atacgactca ctataggcg	60
cgcgtggtcg acggcccggg ctggtatcag cgagtaacga ttcatcatat ctcacactag	120
ggatgaatga ttatttattt agtttatgaa ttgaactat tacttctaat ttctaaatga	180
agacatttaa gtaaaagatt aaaatattct agttcaat attttggatt ttgaattta	240
aatttaatct taaaaaaaaa attaaattta aagaagataa aaaggagaa aataaataga	300
tgaatataat ttgtaaacat gaagaccta tctccagtaa aaaaacatat ggaccttatac	360
tttttgaggt aggaaggatc tacgcgggaa acctcttccct gactgtgaac cccgtatgca	420
gaggcagaga cagagagt	438

<210> 6
<211> 936
<212> DNA
<213> Nucleotide sequence of H12 regulatory region

<400> 6	
aaatacaag gtgacctt at tgcaaaata atccatgcat gaaatgcat catcctttg	60
aaaatgggtt tatctgaatt cttaaatgatc gtgaaaattt aatacatttc atttttagata	120
aatttattat taaaatttcac acttagatgg cctaaaaatt aacacttatt ttacaattt	180
caaataaaaat atacgacgaa atgagtgtaa tttagttggt taagcatgt caaagcttgg	240
agagaaagat catagttga tctttgaaaa ctatactatt gaaaagggtg aagatatcta	300
acctccaaca aaatttattt gatagtcgat tcaaatttac aaaatttggaa aaatattttg	360
taaattgtta agttggaaa aatatgttaa ttcaatttaccatggca cattttctca	420
atctcaaatc acatttaagg gatgttgact acttcgttt tgtacaatc ttacaattt	480

taacatttat aaaatgtgtt ttggtagata aaaagtgtga gtattctta taagagattg	540
tgttttctt ttgtttaac ttataaaata aatatatatt ttatTTTATT ttaacgtgag	600
attgtaaAGAA ttcattataa gattatgtca ttccctcaaa agaaaattag atgatgtcat	660
tttcataact catttctat aaatacagaa aatcctcaaa aatgaaaaac ctcggtaaa	720
aaataaaaga aaaacatcaa tagtgactg gcccacactc attgcttgc ttttagtatga	780
gaaAGTAGAC CTCACCAACC acgaaccgga cgccgaccgg ttcaaccaaa catcacacca	840
atTTTcctaa accataccgg ttttccctc ctttatataa ccattctctc ccctcttctc	900
taaccaagct tcattcaact cttcaacaca tatcag	936

<210> 7
 <211> 1424
 <212> DNA
 <213> Nucleotide sequence of genomic H7

<400> 7	
acgcgtggtc gacggcccg gctggacta aagtattact attaccaaAT tttaggacc	60
ccacccatga caccattgct atatttcaat ttggAAAAT attgctataa agttactgta	120
gtaactttta gaagaaggTT ttTTTTAA ggattttAGA ggaaggTTAG caacacacat	180
gcactttaaa tatacatttt ttcttataaa gttttgtat cgagttgaga aatcatatat	240
atactcataa atcatgtgga ttcatataa ttAAtagaa cacataaatt ttaaccgaga	300
aataAAgtgt tgcaaataa tgTTAAAGA gtacgttgtt aacatttatt taatttctt	360
tattcaatcc acactttgag tcatggactg ctatactaAt tcatttttgtt ttCGCAACC	420
taatttagaga ttgtccagat acaaAGAGGA gtaacctaAt aaATAAATAT taaaATATTc	480
accaacggcc tcagtaagct acttgagct aacaatgaga ttccAAATAA aggttaggtcc	540
ttcccaagtt ctataaatac catccctcac catgtcataa accgcatcac aagttaata	600
ctgtattcat actatacact tATCCTTCA ttacttctt gcatattgtat ccttGTTATC	660
ttgatataata tATCATGGGT gttttactt tcaatgtga acatgtctca accgtggctc	720
cagctaaACT ctacaaggct cttgcaAAAG atgctgatga aatcgTCCC AAGGTGATT	780
ctgctgcccc aagtgtgaa attgttgaag gaaatggagg acccggaact attaAGAAGC	840
tatccattgt tgaagatggc AAAACCAACT ttgtgctaca caaatttagat tcagtggatg	900
aggcaaactt tggatataac tacagcttag tggaggaac agggttggat gaaAGTTAG	960
agaaaAGTTGA atttgagaca AAAATTGTTG ctggctctga tggTGGATCC attgttaAGA	1020
tttcagtgaa ataccatacc aaaggtgatg caactctatc tgaagcagta cgtgaggaga	1080
ctaaggccaa aggaactgga cttatcaagg ccattgaggg ctacgtttta gcaaacccta	1140
attactagcc aattaaACCC tattgaggac ttAAATTGG gttgtgtgt ttcatgcgaa	1200

taataatcaa agtttatgat gcgggttgaag tgtgttgagt atacatcaag gtctttggct	1260
cgtacatgtg tggcgttgcgtt gttggatgtt gtgagggttg agtgctattt tgggtgttta	1320
aaaacaaaaaa cctatgttgt gttggtgata aggtttgca ccatctgtat tatgcaataa	1380
ataatgcaaa agaattttat cgcgaaaaaa aaaaaaaaaa aaaa	1424

<210> 8
<211> 1482
<212> DNA
<213> Nucleotide sequence of genomic H11

<220>
<221> misc_feature
<222> (1)..(1482)
<223> Where n is a or g or c or t or other

<400> 8 cagaaccccg anaggctggt gctagtatgg cttcggttgcataacgactca ctatagggcg	60
cgcgtggtcg acggccccggg ctggtatcag cgagtaacga ttcatcatat ctcacactag	120
ggatgaatga tttattattt agtttatgaa tttgaactat tacttctaatttctaaatga	180
agacatttaa gtaaaagatt aaaatattct agttcaaat attttggatt tttagaattta	240
aatttaatct ttaaaaaaaaa attaaattta aagaagataa aaagggagaa aataaataga	300
tgaatataat ttgttaaacat gaagaccta tctccagtaa aaaaacatat ggaccttatac	360
tttttgaggt aggaaggatc tacgcgggaa acctcttcct gactgtgaac cccgtatgca	420
gaggcagaga cagagagtat ggctccaca ctcagtcgg tcaagcttcc cattttca	480
agcatcaaga cacgccaatc aacctaataa catgttgcact cactccatc caaattcaat	540
attgtccctc ccacccact aaagtttca tttagatcatc aaattaatataaacaact	600
tctttctat ccctcacagc aatcacattt ccattttat tggataccaa ggcaagcaag	660
caagcaagca tcctattcta ttctattctt tcatccatat cttaactctt ttgtttctat	720
accaatccat gatatgaatg ttgttggaaac aggatgcact tgctgttggg ggagagttt	780
ggatatttga aggaagaaca ttgtctctca ttccacccat tgggtgggt gggttggct	840
tctatactct atatgttggc tattttgggt ggcaatggcg ccgagtttagg actattcaaa	900
atgatattaa tgagctcaag aaacaactca aacctaacc ggtcgcccct gatggtaaag	960
cacttggaaac ttccacccca tcacctgttg aacttcaaat ccagaaactt actgaggaga	1020
ggaaagagct tatcaaaggat tcatacaggaa ataaacactt taatgttggaa tccatacttc	1080
taggatttgg tggctttgag gctgttgggt tgaggactca acacatgggtt aaggacagga	1140
aagctatttc caggtccaca ttatggca ggagcaggca ttaccgttctt atgggcactg	1200
gcagcagctc tagtaccacc gatgcagaaa ggcagtgaaa cagccagaaa tcttcacatt	1260

gctctgaata cattgaatgt tcttctcttt gtgtggcaga ttcccactgg acttgatatt 1320
 gtatggaaag tgttttagtt cacaaaatgg ctttgaatgt atgattctca tatgttaagta 1380
 agttcccagg tattttactt tcaaatacgat atttggcaat atcaataaaat gcaaaaatttg 1440
 ctattctgca ttttcaaaaaa aaaaaaaaaa aaaaaaaaaa aa 1482

<210> 9
 <211> 1906
 <212> DNA
 <213> Nucleotide sequence of genomic H12

<400> 9
 aaatacacaag gtgaccttat tttgcaaata atccatgcattt ggaaatgcattt catccttttg 60
 aaaaatgggtt tatctgaatt cttaagttac gtgaaaattt aatacatttc atttttagata 120
 aatttattat taaaattcac acttagatgg cctaaaaattt aacacttattt ttaacaattt 180
 caaataaaaat atacgacgaa atgagtgtaa ttttagtttgtt taagcatcgtt caaagcttgg 240
 agagaaagat catagtttga tctttgaaaaa ctatactattt gaaaagggtt aagatatcta 300
 acctccaaca aaatttattt gatagtcgat tcaaatttatttca aaaaatttggaa aaatatttttg 360
 taaattgtta agttggaaa aatatgttaa ttttcaaattt accatttgca catttttctta 420
 atctcaaatc acatttaagg gatgttgactt actttcgat ttttcaatttcaatc ttacaattt 480
 taacatttattt aaaaatgtttt ttggtagata aaaaatgttca gtattcttta taagagattt 540
 tttttttctt ttgttttaac ttataaaaata aatataattttt ttatattttt ttaacgtttag 600
 attgttaagaa ttcattataa gattatgtca ttccctcaaa agaaaatttagt atgatgtcat 660
 ttccataactt cattttctat aaatacagaa aatccctcaaa aatggaaaac ctcggtcaaa 720
 aaataaaaaga aaaaacatcaa tagtgactg gcccacactc attgctttgc tttagttaga 780
 gaaagtagac ctcaccaacc acgaaccgga cgccgaccgg ttcaacccaaa catcacacca 840
 attttcctaa accataccgg tttttccctc ctttatataa ccattcctctc ccctcttctc 900
 taaccaagct tcattcaactt cttcaacaca tatcagaaac agaaaaaaga agcaaaaacat 960
 tccaaagaatt taacaatggc aaccaacgaa gatcaaaaagc aaactgaatc tggaaagacat 1020
 caagaagttt gtcacaaagag tcttttacaa agtgtatgtc tttaccagta tattcttagag 1080
 accagtgtct tcccaagaga acatgaagcc atgaaagagt tgagagaggt cacagcaaaa 1140
 caccatggaa acatcatgac aacctctgca gatgaaggac aatttttgag catgcttctt 1200
 aaacttatca atgctaagaa taccatggaa attgggtgtct acactggctt cttccctt 1260
 gccactgccc tagctattcc tgaagatggaa aagattttgg ctatggacat taacaaagaa 1320
 aattacgaat tgggtctacc tgtaattaaa aaagctgggtt ttgatcacaat aattgatttc 1380
 agagaaggtc cagctttcc agttcttgat gaaatgtca aagacgaaaa gaatcatgg 1440

agctacgatt tcattttgtt ggatgctgac aaagacaatt acctaacta ccataagagg 1500
 ttaattgatc ttgttaaaagt gggaggtgtg atcggtacg acaacacccat atggaatgga 1560
 tctgtggttt cacccttga tgctccattt aggaagtatg ttaggtacta tagagatttt 1620
 gttttggagc ttaacaaggc tttggctgtg gacccttagga ttgaaatatg tatgcttcct 1680
 gttggatgatc gaatcaactat ctgccgtagg atcaagtaat tggtttgcattt gtgcactata 1740
 tcatgtatc cactgctcca cattattgtt cattattgtg tgaaagctac agagcattta 1800
 aaagtcttca agccttcttg tctttgtta ttttcttca acatatttgtt ggttgttaattt 1860
 ttctcttgcattt attgatattt aaacttcgaa taattgaaag ttatattt 1906

<210> 10

<211> 157

<212> PRT

<213> Amino acid sequence encoded by H7 coding region

<400> 10

Met Gly Val Phe Thr Phe Asn Asp Glu His Val Ser Thr Val Ala Pro
 1 5 10 15

Ala Lys Leu Tyr Lys Ala Leu Ala Lys Asp Ala Asp Glu Ile Val Pro
 20 25 30

Lys Val Ile Ser Ala Ala Gln Ser Val Glu Ile Val Glu Gly Asn Gly
 35 40 45

Gly Pro Gly Thr Ile Lys Lys Leu Ser Ile Val Glu Asp Gly Lys Thr
 50 55 60

Asn Phe Val Leu His Lys Leu Asp Ser Val Asp Glu Ala Asn Phe Gly
 65 70 75 80

Tyr Asn Tyr Ser Leu Val Gly Gly Thr Gly Leu Asp Glu Ser Leu Glu
 85 90 95

Lys Val Glu Phe Glu Thr Lys Ile Val Ala Gly Ser Asp Gly Gly Ser
 100 105 110

Ile Val Lys Ile Ser Val Lys Tyr His Thr Lys Gly Asp Ala Thr Leu
 115 120 125

Ser Glu Ala Val Arg Glu Glu Thr Lys Ala Lys Gly Thr Gly Leu Ile
 130 135 140

Lys Ala Ile Glu Gly Tyr Val Leu Ala Asn Pro Asn Tyr
 145 150 155

<210> 11

<211> 247

<212> PRT

<213> Amino acid sequence encoded by H12 coding region

<400> 11

Met Ala Thr Asn Glu Asp Gln Lys Gln Thr Glu Ser Gly Arg His Gln
1 5 10 15

Glu Val Gly His Lys Ser Leu Leu Gln Ser Asp Ala Leu Tyr Gln Tyr
20 25 30

Ile Leu Glu Thr Ser Val Phe Pro Arg Glu His Ala Met Lys Glu
35 40 45

Leu Arg Glu Val Thr Ala Lys His Pro Trp Asn Ile Met Thr Thr Ser
50 55 60

Ala Asp Glu Gly Gln Phe Leu Ser Met Leu Leu Lys Leu Ile Asn Ala
65 70 75 80

Lys Asn Thr Met Glu Ile Gly Val Tyr Thr Gly Tyr Ser Leu Leu Ala
85 90 95

Thr Ala Leu Ala Ile Pro Glu Asp Gly Lys Ile Leu Ala Met Asp Ile
100 105 110

Asn Lys Glu Asn Tyr Glu Leu Gly Leu Pro Val Ile Lys Lys Ala Gly
115 120 125

Val Asp His Lys Ile Asp Phe Arg Glu Gly Pro Ala Leu Pro Val Leu
130 135 140

Asp Glu Met Ile Lys Asp Glu Lys Asn His Gly Ser Tyr Asp Phe Ile
145 150 155 160

Phe Val Asp Ala Asp Lys Asp Asn Tyr Leu Asn Tyr His Lys Arg Leu
165 170 175

Ile Asp Leu Val Lys Val Gly Gly Val Ile Gly Tyr Asp Asn Thr Leu
180 185 190

Trp Asn Gly Ser Val Val Ala Pro Pro Asp Ala Pro Leu Arg Lys Tyr
195 200 205

Val Arg Tyr Tyr Arg Asp Phe Val Leu Glu Leu Asn Lys Ala Leu Ala
210 215 220

Val Asp Pro Arg Ile Glu Ile Cys Met Leu Pro Val Gly Asp Gly Ile
 225 230 235 240

Thr Ile Cys Arg Arg Ile Lys
 245

<210> 12
<211> 44
<212> DNA
<213> Nucleotide sequence of PCR-Select cDNA synthesis primer
<220>
<221> misc_feature
<222> (1)..(44)
<223> where n is a or g or c or t or other

<400> 12
ttttgtacaa gctttttttt tttttttttt tttttttttt ttnn

44

<210> 13
<211> 44
<212> DNA
<213> Nucleotide sequence of Adaptor 1

<400> 13
ctaatacgac tcactatagg gctcgagcgg ccgccccggc aggt

44

<210> 14
<211> 42
<212> DNA
<213> Nucleotide sequence of Adaptor 2R

<400> 14
ctaatacgac tcactatagg gcagcgtggc cgccggccgag gt

42

<210> 15
<211> 22
<212> DNA
<213> Nucleotide sequence of PCR primer 1

<400> 15
ctaatacgac tcactatagg gc

22

<210> 16
<211> 19
<212> DNA
<213> Nucleotide sequence of nested PCR primer 1

<400> 16
tcgagcggcc gcccgggca

19

<210> 17
<211> 20

<212> DNA
<213> Nucleotide sequence of nested PCR primer 2R

<400> 17
agcgtggtcg cggccgaggt

20

<210> 18
<211> 10
<212> DNA
<213> Nucleotide sequence of complement (partial)

<400> 18
ggcccggtcca

10

<210> 19
<211> 10
<212> DNA
<213> Nucleotide sequence of complement (partial)

<400> 19
gccggctcca

10